CLAIMS

1. An LED driving device comprising:

a power supply voltage generator;

an applied voltage storage that stores therein an independent applied voltage value for an LED of each of colors, red, green and blue, provided in a display device; and

an applied voltage former that converts a voltage generated in the power supply voltage generator into the applied voltage value stored in the applied voltage storage to apply to the LED of each of colors.

2. The LED driving device according to claim 1, wherein the applied voltage storage is comprised of writable memory, and a signal line is connected to the memory to input an applied voltage value to store.

3. The LED driving device according to claim 1, wherein the applied voltage storage stores independent applied voltage values for LEDs of the same color.

4. The LED driving device according to claim 1, further comprising:

a duty ratio storage which is comprised of writable memory and stores therein, independently of the LED of each of colors, a duty ratio of a PWM signal to make a fine adjustment to luminance during an emission period of the LED of each of colors;

a PWM controller which forms the PWM signal based on the duty ratio stored in the duty ratio storage

independently of the LED of each of colors; and

a signal line connected to the duty ratio storage to input the duty ratio to the duty ratio storage.

5. The LED driving device according to claim 4, wherein the applied voltage storage stores an applied voltage value for the LED of each of colors enabling the LED of each of colors to emit light in luminance more than or equal to a desired luminance, while the duty ratio storage stores a duty ratio for bringing an emission luminance of the LED of each of colors close to the desired luminance.

6. The LED driving device according to claim 4, wherein the duty ratio storage stores independent duty ratios on LEDs of the same color.

7. The LED driving device according to claim 1, wherein among LEDs of red, green and blue, red LEDs undergo cascade connection.

8. The LED driving device according to claim 1, wherein the power supply voltage generator generates a single voltage value, and the applied voltage former has a D/A converter that performs digital/analog conversion on a voltage value stored in the applied voltage storage, and a voltage varying section that converts the single voltage generated in the power supply voltage generator into a voltage of an analog value converted in the D/A converter.

9. A driving voltage setting device that sets a driving voltage of the LED driving device according to claim 1, comprising:

a voltage applier that applies a variable voltage to the LED of each of colors, red, green and blue;

a detector that detects a luminance of the LED of each of colors when the voltage applier applies the voltage; and

a data writer that writes in the applied voltage storage a minimum applied voltage value of the LED of each of colors when the detector detects the luminance more than or equal to a desired value on the LED of each of colors, as an applied voltage value of the LED of each of colors.

10. The driving voltage setting device according to claim 9, further comprising:

a PWM controller that controls the LED of each of colors, red, green and blue, using a PWM signal with a different duty ratio,

wherein the data writer writes in memory a duty ratio on the LED of each of colors when the detector detects a desired luminance on the LED of each of colors.

11. The driving voltage setting device according to claim 9, wherein the voltage applier applies a variable voltage interpedently to each of LEDs of the same color, the detector detects a luminance independently on each of the LEDs of the same color, and the data writer writes a minimum applied voltage value of each of the LEDs of the same color when a luminance more than or equal to a desired value is detected on the each of the LEDs of

the same color in the applied voltage storage independently as the applied voltage value.

12. The driving voltage setting device according to claim 10, wherein the PWM controller controls each of the LEDs of the same color using a PWM signal with a different duty ratio, and the data writer writes in the memory a duty ratio on each of the LEDs of the same color when a desired luminance is detected on the each of the LEDs of the same color.

13. An LED driving method, wherein a minimum driving voltage such that a desired luminance is obtained is measured in advance for an LED of each of colors, red, green and blue, the driving voltage is stored in an applied voltage storage for the LED of each of colors, and a voltage of the stored value is applied to the LED of each of colors.

14. The LED driving method according to claim 13, wherein PWM control is performed on the LED of each of colors using a PWM signal with a duty ratio varying with the LED of each of colors in such a state that the minimum driving voltage is applied to the LED of each of colors.

15. A driving voltage setting method for setting a driving voltage of the LED driving device according to claim 1, comprising:

a variable voltage applying step of applying a variable voltage to an LED of each of colors, red, green and blue;

a luminance detecting step of detecting a luminance

of the LED of each of colors when the variable voltage is applied; and

a data writing step of writing in the applied voltage storage a minimum applied voltage value of the LED of each of colors when the luminance more than or equal to a desired value is detected, as an applied voltage value of the LED of each of colors.

16. The driving voltage setting method according to claim 15, wherein the variable voltage applying step, the luminance detecting step and the data writing step are carried out while performing PWM control using a PWM signal with an ON duty ratio more than or equal to a predetermined value, an applied voltage value of the LED of each of colors is stored in the applied voltage storage, an ON duty ratio of the PWM signal is then decreased gradually to make a fine adjustment to the luminance of the LED of each of colors, and the ON duty ratio of the PWM signal is stored in memory when a desired luminance is obtained.